

Original article

Prevalence and Predictors of Internet Bullying

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Abstract

Purpose: With the Internet quickly becoming a new arena for social interaction, it has also become a growing venue for bullying among youth. The purpose of the present study was to contrast the prevalence of Internet bullying with physical and verbal bullying among elementary, middle, and high school boys and girls, and to examine whether key predictors of physical and verbal bullying also predicted Internet bullying.

Methods: As part of an ongoing, statewide bullying prevention initiative in Colorado, 3,339 youth in Grades 5, 8, and 11 completed questionnaires in 78 school sites during the fall of 2005, and another 2,293 youth in that original sample participated in a follow-up survey in 65 school sites in the spring of 2006. Questionnaires included measures of bullying perpetration and victimization, normative beliefs about bullying, perceptions of peer social support, and perceptions of school climate.

Results: The highest prevalence rates were found for verbal, followed by physical, and then by Internet bullying. Physical and Internet bullying peaked in middle school and declined in high school. Verbal bullying peaked in middle school and remained relatively high during high school. Males were more likely to report physical bullying than females, but no gender differences were found for Internet and verbal bullying. All three types of bullying were significantly related to normative beliefs approving of bullying, negative school climate, and negative peer support.

Conclusions: Preventive interventions that target school bullying by changing norms about bullying and school context may also impact Internet bullying, given the shared predictors. © 2007 Society for Adolescent Medicine. All rights reserved.

Keywords:

Internet bullying; Prevention; Normative beliefs; School context

Bullying is a form of aggression involving intentional and harmful behavior marked by repeated engagement and an asymmetric physical or psychological power relationship [1–3]. The specific type of harmful behavior can vary considerably; previous studies of children's bullying have considered a range of diverse behaviors including name calling, saying mean things, destruction or taking of property, demanding money, social exclusion, hitting, and kicking [4]. What brands these behaviors as bullying rather than aggression is that they occur repeatedly, typically involving a

weaker victim within the context of an ongoing social interaction [5]. As such, research examining the prevalence, predictors, and prevention of bullying largely has examined this behavior as it unfolds within a specific social context. For children, schools have been the primary context for studying bullying behavior [2,6–9].

Over the last decade, interest in understanding and preventing bullying among school children in the U.S. and internationally has surged [6,10]. Such interest coincides with a growing awareness of the detrimental consequences of being bullied on children's well-being as well as the recognition that bullying is a significant problem in schools [1]. Still, prevalence rates vary as a function of how bullying is measured, what type of bullying (e.g., physical vs. verbal) is assessed, the age of respondents, and the country

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where the study takes place. Reported perpetration and victimization rates typically range from 10% of students reporting physical bullying or victimization to more than 50% reporting indirect bullying or victimization involving teasing, name calling, spreading rumors, or verbal aggression [11,12].

Because bullying has been framed as a schoolyard issue, the focus of research has largely been on bullying in schools—whether in the classroom, locker room, hallway, or bathroom—based on the assumption that personal contact is a prerequisite to bullying. Yet, in recent years, technology has transformed the landscape of children's social lives. With an estimated 45 million children between the ages of 10 and 17 in the U.S. alone using the Internet every day, social interactions have increasingly moved from personal contact in the school room to virtual contact in the chat room, and Internet bullying has emerged as a new and growing form of social cruelty. Such bullying is clearly not physical in nature and has more in common with verbal bullying. Intimidation is quickly being augmented by humiliation, destructive messages, gossip, slander, and other virtual taunts communicated through e-mail, instant messaging, chat rooms, and blogs [13]. The Internet has become a new arena for social interactions, allowing children and youth to say and do things with a certain degree of anonymity and limited oversight by adult monitors. Internet bullying, as defined here, refers to the willful use of the Internet as a technological medium through which harm or discomfort is intentionally and repeatedly inflicted through indirect aggression that targets a specific person or group of persons.

The purpose of the present study is to contrast the prevalence of Internet bullying with physical and verbal bullying among 5th, 8th, and 11th grade boys and girls and to examine whether key predictors of physical and verbal bullying also predict Internet bullying. The focus is on youth involvement in such bullying as perpetrators, not victims. Perhaps because this type of bullying has unfolded on the fringes of the adult radar screen, it has only recently been considered in studies of bullying among children and youth. Relatively little is known about the prevalence of Internet bullying and how this compares with other types of bullying for boys and girls across different ages. Little is also known about whether Internet bullying is predicted (and potentially prevented) by the same types of factors that have been linked to physical and verbal bullying in schools [13]. To date, information on the prevalence of Internet bullying comes primarily from anecdotal reports and a limited number of youth surveys. Findings suggest that Internet bullying and victimization rates are around 25% [13,14]. This is higher than physical bullying rates but lower than indirect bullying rates from most school-based prevalence studies. Very few studies have examined age and gender differences for Internet bullying, although overall bullying appears to peak during early adolescence, with verbal bullying remaining

high throughout the adolescent years. Furthermore boys are more likely to engage in physical bullying than girls [1].

Even fewer studies have examined the correlates and predictors of Internet bullying and whether these are similar or distinct from factors linked to bullying in schools. Overall, predictors of physical and verbal bullying are quite similar to predictors of aggression more generally. However studies of the etiology and prevention of bullying have emphasized a smaller set of predictors reflecting the social and normative context of bullying within peer networks and school settings [10]. Two important predictors linked to bullying in both prediction and prevention studies are student perceptions of the acceptability (or moral approval) of bullying and student perceptions that school is an unsupportive context in which peers and adults cannot be trusted.

Bullying is behavior that is harmful to others and falls within the domain of behaviors with moral consequences: endorsement of the acceptability of bullying is akin to moral approval because harm to others is considered to be a key element of moral reasoning [15]. A consistent finding in both the aggression and bullying literature is that children who endorse normative beliefs supporting such behavior are more likely to be perpetrators [2,15–17]. A peer and school culture that supports bullying is more likely to have individuals who view this behavior as acceptable, further increasing normative support for bullying. Indeed a primary emphasis of many school-based bullying prevention programs is to change the normative climate so that bullying is seen as unacceptable [6,10].

Besides normative climate, several studies have examined the impact of various contextual characteristics of schools on bullying perpetration and victimization. For example, increases in student bullying over time are more likely in high-conflict, disorganized schools than in low-conflict, harmonious schools [18]. Low levels of supervision within school settings have also been associated with higher rates of bullying [19]. Disciplinary harshness, safety problems, and negative peer interactions have also been linked to behavior problems and bullying [20]. The influence of peers is particularly noteworthy. Within the school setting, peers can escalate bullying through encouragement and validation [21]. However, just as peers can enable bullying, they can also provide a supportive social context that encourages acceptance, belonging, and trust; many effective bullying prevention programs encourage students helping other students to form positive peer support systems [2,6].

If students believe that bullying is acceptable and if they feel disconnected and unsupported at school and by peers, they should be more likely to engage in all types of bullying behavior, including Internet bullying. However because both verbal and Internet bullying can occur behind the victim's back with a greater degree of anonymity than with physical bullying, both the prevalence and predictors of Internet bullying are expected to be more similar to verbal bullying than to physical bullying.

Methods

Data for the present research were collected as part of a larger study evaluating a statewide initiative in Colorado to strengthen the skills and willingness of youth and adults to intervene in bullying situations. The Bullying Prevention Initiative (BPI) is a 3-year, \$8.6-million initiative funded by The Colorado Trust, a private grant-making foundation in Denver, Colorado. The grantees funded by this initiative represent school districts, individual schools, or community-based organizations, evenly split between rural and urban areas of the state and responsible for implementing bullying prevention programming in 78 schools across 40 of Colorado's 64 counties.

The larger BPI evaluation will provide an empirically-based understanding of bullying and bystander behavior among youth, including an increased awareness of this behavior, social cognitive processes involved in the prevention of bullying, the social context surrounding bullying incidents, and the involvement of adults and youth in preventing such incidents. These issues are being addressed by collecting survey data from youth and adults in schools, collecting data from grantees concerning program implementation, and conducting a supplemental qualitative study seeking to acquire in-depth information from adults about challenges and successes in program implementation and from youth in terms of their awareness of the bullying prevention programs and their perceived effectiveness. A pre-post survey design collects data from youth in the fall and the spring of 3 academic years (2005–2006, 2006–2007, and 2007–2008) within the 78 schools. This design allows the assessment of single year changes in individual youth and contextual (school level) changes over the full 3 years of the BPI. All instruments developed to collect data from youth were piloted in the summer of 2005 before full implementation in the fall of that year, with all indices having acceptable reliabilities (i.e., alpha coefficients $> .70$).

Participants in the present study

The first year of the BPI was a start-up period for both the prevention programming as well as the evaluation study in refining its data collection instruments and procedures. During this year, 3,339 youth completed questionnaires in the 78 school sites during the fall of 2005, and another 2,293 youth in that original sample participated in a follow-up survey in 65 school sites in the spring of 2006. Data were collected in 5th, 8th, and 11th grades, representing transition years in elementary, middle, and high schools. All data collection was conducted in compliance with the protocol approved by the human subjects review board, including acquiring informed parental consent and youth ascent. To ensure the quality of data and that school samples are representative, a subsample of these first-year participants was selected for the present analysis based on two criteria: (1) schools must have successfully completed both fall and

Table 1

Demographic characteristics of the total and subsample

| Demographic characteristic | Subsample | Total sample |
|----------------------------|-----------|--------------|
| Rural | 61.0% | 46.0% |
| Urban | 39.0% | 54.0% |
| 5 th Grade | 43.5% | 31.3% |
| 8 th Grade | 48.2% | 49.7% |
| 11 th Grade | 08.3% | 19.0% |
| Male | 45.0% | 46.0% |
| Female | 55.0% | 54.0% |
| White, Non-Latino | 62.0% | 60.5% |
| Latino | 26.9% | 28.1% |
| African-American | 06.4% | 05.9% |
| Asian-American | 03.5% | 04.0% |
| Native-American | 01.2% | 01.5% |
| Reduced-cost or free lunch | 49.0% | 53.1% |

Note: Qualification for reduced-cost or free lunch was used as an indicator of socioeconomic status.

spring data collection, and (2) consent and completion rates at those schools must be 50% or greater. Applying these selection criteria yielded a subsample of 1,519 youth participating in both the fall and spring data collection, representing 46 school sites. As shown in Table 1, the subsample has a greater percentage of rural participants, compared with the total first-year sample, and a greater percentage of 5th grade but a lower percentage of 11th grade participants, compared with the total first-year sample. The percentages for the remainder of the demographic characteristics are very similar between the subsample and the total first-year sample.

Procedures

Data were collected using two different electronic methods, with the choice of methods negotiated with schools in terms of what was deemed best for their students. However paper questionnaires were used by a small percentage of youth absent the day for which data collection was scheduled (4% of the total first-year sample and 1.6% of the subsample analyzed here). First, data collectors used a liquid crystal display projector to present questionnaire items in classrooms of approximately 30 students or less (used by 61.7% of the students in this subsample). After the data collectors read each question aloud, youth used a wireless response pad to enter their answers, which were automatically recorded in an electronic database and linked to the student identification code. The questionnaire was administered in English or Spanish as needed, using standard back-translation methods. Second, the questionnaire was adapted to a web-based format linked to the electronic database (36.7% of students in this subsample used this method). The youth web-based questionnaire was administered in school computer laboratories. Data collectors assisted youth in logging on to the password-protected questionnaire and were available for assistance as youth answered questions at

their own pace. No evidence was found that these different data collection procedures influenced responding.

Measures

Bullying perpetration. Items bearing on the perpetration (not victimization) of different types of bullying were adapted from Espelage et al [22]. Youth were asked to respond to the following four items: “I pushed, shoved, tripped, or picked fights with students I know are weaker than me”; “I teased or said mean things to certain students”; “I spread rumors about some students”; and “I told lies about some students through e-mail or instant messaging.” Numeric coding (in parentheses) and response options included (1) never, (2) one or two times, (3) several times, and (4) a lot. The first item was used to measure physical bullying perpetration, and the second and third items were combined to measure verbal bullying perpetration. Internet bullying perpetration was measured by the fourth item. Even though these items were used separately to identify perpetrators of physical, verbal, and Internet bullying, they form a reliable measure when combined as a summary index (alpha coefficient = .73).

As mentioned below, the appropriate temporal ordering between the predictors examined in this empirical analysis and these types of bullying perpetration requires using data collected in the fall of 2005 for the predictors and data gathered in the spring of 2006 for bullying perpetration. Therefore, the reference period for the four bullying items was “since the school year began.” The distributions for these variables are highly skewed, with a high concentration of participants scoring one (i.e., never) and a precipitous decline in the distribution of participants across the higher scores. Hence these variables were dichotomized, with comparisons made between those participants who reported never engaging in these types of bullying (scoring 1) with those who reported doing so one or more times during the school year (scoring 2–4).

Moral approval of bullying. Moral beliefs about bullying perpetration and bystander involvement in bullying situations were assessed by asking participants to evaluate six different items on a four point Likert-type scale ranging from “really wrong” to “perfectly ok.” These items were taken from the Normative Beliefs About Aggression Scale [15] and were modified slightly to refer to bullying instead of aggression. The items included bullying perpetration as mentioned above (including Internet bullying), in addition to items pertaining to negative bystander involvement, such as encouraging others to fight smaller students or spread lies and rumors about them. These six items were summed to construct a summary additive index (alpha coefficient = .93). The distribution on the index was positively skewed, but it had a clustering of cases at the high end of the continuum of scores. The distribution of this measure was adjusted by sub-dividing it into six categories having ap-

proximately equal distributions. High scorers indicate participants who approve bullying perpetration and negative bystander behavior in general, not behavior-specific approval. Participants scoring low on this index disapprove of bullying and negative bystander behavior in general. This measure is appropriate given the emphasis on capturing the normative orientation of students about bullying overall, not behavior-specific moral beliefs.

School climate. Student perceptions of school climate were assessed using the California School Climate Scale [23]. This measure contains nine items about teachers, school staff and administrators, school policy, and a students’ perceived personal connection to the school. For example, participants were asked whether they disagree or agree with statements like “My teachers respect me,” “My teachers are fair,” or “Teachers at my school are nice people.” Other items addressed whether the principal in their school listens to the ideas of students, whether students who break school rules are treated fairly, and whether teachers and staff are doing the right things to prevent bullying in general, not specific forms of bullying in the school. The nine items were summed to form an additive index (alpha coefficient = .84), with scores ranging from 9 to 36, given the response categories of the individual items. Respondents with high scores perceived a positive school climate, whereas those with low scores perceived a more negative school climate.

Perceived peer support. This four-item scale focused on positive and negative qualities of peers as a source of social support. It was adapted from the Generalized Perception of Peers Scale [24]. Regardless of social context (e.g., schools), participants were asked to assess whether “students their age” care about what happens to them, will help them in time of need, can be trusted, and are sensitive to their feelings. Response options range from “no, not at all” to “yes, completely.” The four items were summed to form an additive index, with scores ranging from a low of 4 to a high of 16, given the response categories for each of the individual items. High scores indicated higher perceptions of peers as supportive, whereas low scores indicated the opposite view. The alpha coefficient for this scale was .79.

Results

The results presented below are arranged according to the two primary research objectives of this analysis: (1) to determine the prevalence of Internet compared with verbal and physical bullying perpetration in this sample of youth, and (2) to determine whether predictors of Internet bullying perpetration are similar to predictors of verbal and physical bullying perpetration. The first objective is addressed simply by tabulating the distributions of the three forms of bullying and examining whether these distributions vary by gender and grade level (5th, 8th, and 11th grades). The empirical examination by gender and grade was done by

estimating their effects on each form of bullying perpetration through logistic regression, given the dichotomous bullying measures used.

The second objective is addressed by estimating the bivariate relations between each of the three predictors and the three forms of bullying perpetration. As noted above, these behavioral measures are dichotomized, differentiating between participants who report never perpetrating such behavior and those reporting they did so one or more times during the school year. Hence, the empirical relations were estimated using logistic regression, similar to the estimation of gender and grade level effects. The results of these analyses are presented in the text and in line graphs, where the predicted probabilities of each bivariate equation are plotted against the predictor variable respective to each equation [25]. Statistical tests for the equality of estimated coefficients across equations are also conducted. Such tests determine whether the estimated effects for Internet bullying perpetration are significantly different from those of physical and verbal bullying perpetration (i.e., are such effects similar or different for the three forms of bullying). The following formula was applied for these statistical tests [26]:

$$Z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_2^2}}$$

Prevalence of bullying

Table 1 shows the distribution of Internet, physical, and verbal bullying perpetration for the total sample of youth. Verbal bullying is clearly most prevalent for the total sample, followed by physical bullying and then bullying via e-mail or instant messaging. In short, Internet bullying was a part of the behavioral repertoire of only a minority of youth in this sample during the last school year, but its prevalence is nontrivial. These three types of bullying perpetration are clearly interrelated, with ordinal associations (gamma coefficients) ranging from .66 for the relation between Internet and physical bullying to .87 for the relation between Internet and verbal bullying. However, distinctions remain, as suggested by 24.8% of the sample refraining from any type of bullying, 37.9% engaging in only one type, 30.7% perpetrating two types, and only 6.6% self-reporting involvement in all three types.

Logistic regression was used to estimate the effects of gender and grade on each of the three forms of bullying perpetration. No gender differences were found for Internet and verbal bullying, although such differences were pronounced for physical bullying, with males being more than twice as likely as females to report perpetrating such behavior ($b = .79$, odds ratio [OR] = 2.21, $p = .00$). Grade was significantly related to all forms of bullying perpetration, with the estimated effect being literally identical between Internet and verbal bullying ($b = .20$, OR = 1.22,

Table 2

Percentage of youth self-reporting verbal, physical, and Internet bullying perpetration, by grade

| Type of bullying | 5 th Grade | 8 th Grade | 11 th Grade | Total sample |
|------------------|-----------------------|-----------------------|------------------------|--------------|
| Verbal | 32.6% | 78.5% | 72.3% | 70.7% |
| Physical | 34.8% | 44.6% | 37.8% | 40.3% |
| Internet | 04.5% | 12.9% | 09.9% | 09.4% |

$p = .00$), but substantially smaller for physical bullying ($b = .08$, OR = 1.09, $p = .00$).

Given these significant grade-level effects, the distribution by grade for verbal, physical, and Internet bullying perpetration is also displayed in Table 2. About one third of 5th-graders reported engaging in verbal bullying in the past school year, with the prevalence rates then peaking in 8th grade and dropping off only slightly by 11th grade. A similar pattern holds for physical bullying as well, although the prevalence rates are lower than verbal bullying, especially among 5th and 11th-graders. A relatively small percentage of 5th-graders reported engaging in Internet bullying, with the distribution peaking in 8th grade and again declining slightly among 11th-graders.

Predictors of bullying

Moral approval of bullying. Figure 1 presents the results of the logistic regressions in which the empirical relations between moral approval of bullying and verbal, physical, and Internet bullying perpetration were estimated. The results show that this predictor is significantly and positively related to all three forms of bullying as expected; that is, beliefs endorsing bullying and negative bystander behavior are associated with self-reported involvement in verbal, physical, and Internet bullying. Specifically, an increase in one of the six ordinal categories of the moral beliefs measure (see description of measure above) is associated with a 43% increase in the odds of verbal bullying ($b = .36$, OR = 1.43, $p = .00$), a 27% increase in the odds of physical bullying ($b = .24$, OR = 1.27, $p = .00$), and a 24% increase in the odds of Internet bullying ($b = .26$, OR = 1.24, $p = .00$). However, the estimated effects for verbal bullying are significantly greater than those of both physical and Internet bullying ($Z = 2.40$ and $Z = 2.34$, $p = .00$, respectively), but the difference between the estimated effects for physical and Internet bullying is not statistically significant. In short, although moral beliefs approving of bullying and negative bystander behavior are significantly and positively related to all three forms of bullying perpetration, the estimated effects for Internet bullying appear to be significantly lower than for verbal bullying.

Perceived school climate. The results of the logistic regressions for perceived school climate are shown in Figure 2. Also as expected, the line graph shows that the more youth perceive themselves as connected to their schools, with the



Figure 1. Empirical relations between moral beliefs and the predicted probability of verbal, physical, and Internet bullying perpetration.

climate being trusting, fair, pleasant, etc. (i.e., a positive school climate), the lower is their self-reported involvement in verbal, physical, and Internet bullying perpetration. An increase of a single unit on the 9–36-point perceived school climate index (see description of measure above) is associated with a 7% decline in the odds of physical bullying ($b = -.07$, $OR = .93$, $p = .00$), a 9% decline in the odds of Internet bullying ($b = -.10$, $OR = .91$, $p = .00$), and a 10%

decline in the odds of verbal bullying ($b = -.11$, $OR = .90$, $p = .00$). Moreover, the difference between the estimated effects for Internet bullying and either physical bullying or verbal bullying is not statistically significant.

Perceived peer support. As displayed in Figure 3, youth perceptions that friends their age are trustworthy, caring, and helpful are significantly associated with lower self-

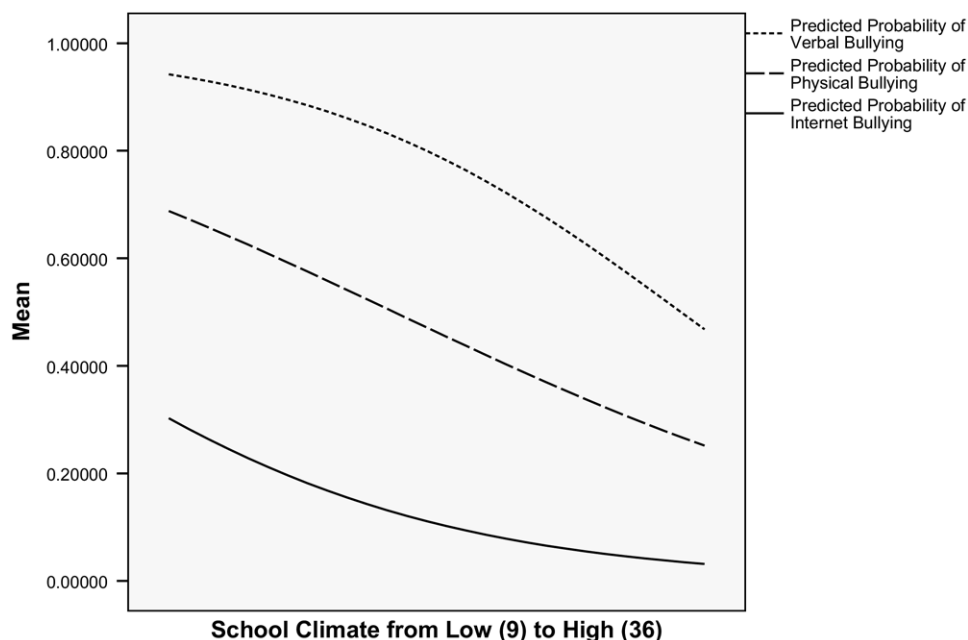


Figure 2. Empirical relations between school climate and the predicted probability of verbal, physical, and Internet bullying perpetration.

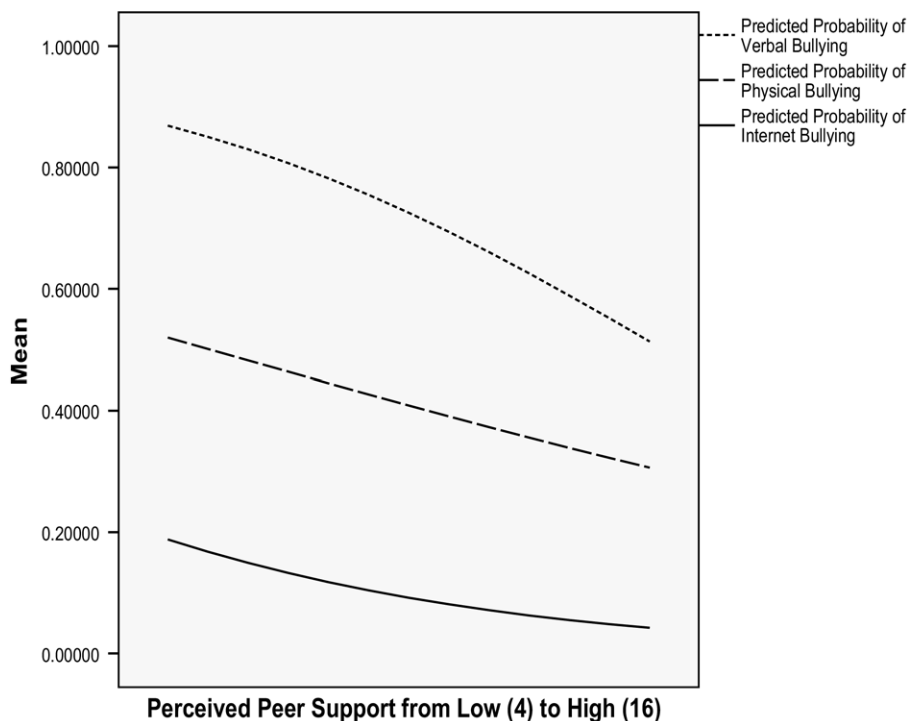


Figure 3. Empirical relations between perceived peer support and the predicted probability of verbal, physical, and Internet bullying perpetration.

reported participation in verbal, physical, and Internet bullying. Again, these empirical relations were anticipated. A single unit increase on the four- to 16-point index of perceived peer support (see description of measure above) is associated with a 7% decline in the odds of physical bullying ($b = -.08$, $OR = .93$, $p = .00$), with the estimated effects being greatest for Internet ($b = -.14$, $OR = .87$, $p = .00$) and verbal ($b = -.15$, $OR = .86$, $p = .00$) bullying. Similar to the empirical relations between perceived school climate and these three forms of bullying perpetration, the estimated effects for Internet bullying are not significantly different from those of verbal or physical bullying.

Summary and conclusion

The findings on the prevalence of bullying perpetration suggest that distributions vary by type, with verbal being most prevalent, followed by physical and then by Internet bullying. Physical and Internet bullying peaked in 8th grade and declined in 11th grade, whereas verbal bullying peaked in 8th grade and remained relatively high in the 11th grade. Males were more likely than females to report physical bullying perpetration. Consistent with the expectation that Internet bullying and verbal bullying would share common features, no gender differences were found for prevalence of Internet and verbal bullying.

Three predictors of bullying were empirically examined. One reflects an individual's normative orientation about the moral acceptability of bullying—that is, whether such behavior is right or wrong. However, the other two predictors

capture perceptions of either the context in which youth regularly participate (i.e., schools) or the nature of peers with whom youth regularly interact (i.e., students their age). Regardless, Internet bullying was significantly related to all three predictors, and these empirical relations were similar to those of physical and verbal bullying, with the one exception of moral beliefs having a significantly greater positive estimated effect on verbal bullying than on Internet bullying. These findings suggest that the causal pathways to Internet bullying may not be unique; rather, it appears to share common causal pathways with other forms of bullying, particularly verbal bullying.

Technological advances (e.g., Internet e-mail, web sites, and blogs) merely provide yet another venue through which bullying among youth can occur. Indeed a limitation of the current study is that we did not consider a wider range of electronic bullying methods such as picture cell phones and text messages. However preliminary evidence from the second year of the larger study suggests that expanding the scope of the Internet question does not make a major difference. Specifically, the second-year student survey added cell phone text messaging and bullying on various websites. The result was an Internet bullying prevalence rate of 13.6% for the full pre-tested sample in year two, compared with 12.0% for the full pre-tested sample in year 1. These rates are comparable to more recent estimates of Internet bullying (13.1%) based on only 84 adolescents 13–18 years of age [27].

The present study highlighted common predictors of different types of bullying, including Internet bullying. The

findings suggest that preventive interventions can impact these diverse types of bullying by changing normative beliefs about the acceptability of bullying while simultaneously considering how to increase trust and support among peers and within the school setting. For schools, this suggests a “whole school” approach to bullying prevention that facilitates changes in beliefs and behaviors toward greater support, trust, and cohesion [6,10]. Furthermore, it is important to consider additional potential predictors uniquely linked to the anonymous nature of bullying via the Internet or other communication technologies (e.g., cell phone cameras, text messaging) that may further enhance and understanding of this behavior and thus preventive efforts in this domain. Once again, however, the findings reported here underscore a critical point of this paper: Common social forces influence the various ways in which bullying is expressed—through physical aggression, verbal aggression, or aggression perpetrated through new communication technologies.

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